

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Thus, all of claims 1-20 have been cancelled in favor of new claims 21-32.

New claim 21 corresponds to amended claim 2 in the PCT Rule 34 Amendment, and results from a combination of the features of original claims 1, 2 and 6.

New claim 22 corresponds to original claim 3.

New claim 23 corresponds to original claim 4.

New claims 24-26 correspond to original claim 5.

New claims 27-32 correspond to original claim 7.

The patentability of the presently claimed invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Thus, the rejection of claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Wnuk et al. (US 5,939,467) in view of Ullmann's Encyclopedia of Industrial Chemistry, as applied to the new claims, is respectfully traversed.

New claim 21 is characterized in that a biodegradable laminate sheet comprising a predetermined non-stretched polylactic acid-family resin layer, and a layer of a biodegradable resin other than a polylactic acid-family resin having a glass transition temperature of 0°C or less and a melting point of 80°C or higher, is formed at a temperature higher than the melting point of the biodegradable resin other than a polylactic acid-family resin.

Since the biodegradable resin other than a polylactic acid-family resin has a melting point of 80°C or higher, the formed body has sufficient heat resistance (see page 11, lines 24-25 of the specification).

Also, since the biodegradable laminate sheet is formed at a temperature higher than the melting point of the biodegradable resin other than a polylactic acid-family resin, the formed body has sufficient heat resistance and formability (see page 13, lines 19-20 of the specification).

By satisfying all these requirements, a formed body is obtainable having excellent heat resistance, shock resistance, transparency and formability (see page 21, lines 7-13 of the specification).

In Wnuk et al '467, non-crystalline polylactide (column 7, lines 23-50) and high melting aliphatic polyesters (column 18, lines 49-68) are disclosed. Wnuk et al. also discloses multilayer film structures (column 34, lines 15-19).

Ullmann's discloses a method of forming multilayer films (sections 2.4.2 - 2.4.3).

But neither of the references discloses the claimed method in which a laminated film comprising two layers of the claimed two resins is formed at a temperature higher than the melting point of the biodegradable resin other than a polylactic acid-family resin. Also, neither of the references teaches that only if a laminated sheet as claimed is formed under the conditions as claimed, will the formed body have excellent heat resistance and formability.

Further, neither of the references teaches that by using, as the biodegradable resin other than a polylactic acid-family resin, a resin having a melting point of 80°C or higher, the formed body has improved heat resistance.

Applicant will now discuss why the formed body has improved heat resistance by forming the laminated sheet comprising the claimed two specific resins under the claimed conditions.

The film used in the present invention is a laminate of two different kinds of resins (a polylactic acid-family resin and a biodegradable resin other than a polylactic acid-family resin). It is well-known that a polylactic acid-family resin has a glass transition temperature of about 60°C and a melting point of about 170°C. Claim 21 set forth above requires the biodegradable laminate sheet to be formed at a temperature higher than the melting point of the biodegradable resin other than a polylactic acid-family resin. Since the biodegradable resin other than a polylactic acid-family resin has a melting point of 80°C or higher, the biodegradable laminate sheet is formed at a temperature higher than both the glass transition temperature of the polylactic acid-family resin (which is about 60°C) and the melting point of the biodegradable resin other than a polylactic acid-family resin. Neither of the references teaches such temperature conditions when forming the laminated sheet as claimed.

By forming the above-mentioned biodegradable laminated sheet in the above-defined temperature range, the formed body has sufficient heat resistance and formability (see the specification, page 13, lines 19-20). This is because under such temperature conditions, the laminated sheet is formed when the biodegradable resin other than a polylactic acid-family resin is melted and the polylactic acid-family resin is softened (because the forming temperature is higher than the glass transition temperature (about 60°C) of the polylactic acid-family resin), and when the laminated sheet is cooled after forming, the biodegradable resin other than a polylactic acid-family resin crystallizes. This makes flawless forming possible. The formed body is thus less likely to deform and shows improved heat resistance. This is supported by the fact that Examples 1 to 6 of the present specification all have excellent heat resistance and formability, while Comparative Example 3, which has a forming temperature of 75°C, i.e. a temperature lower than the melting point of the biodegradable resin other than a polylactic acid-family resin, results in a product which is insufficient both in heat resistance and formability (see the specification, page 21, lines 2-5 and Table 1 at page 22).

Neither of the references teaches any the above effects brought about when the laminated sheet comprising the claimed plurality of resins is formed under the claimed temperature conditions.

For these reasons, Applicant takes the position that the subject matter of new claim 21 is clearly patentable over the applied references.

Since new claims 22-32 are directly or indirectly dependent on claim 21, the subject matters of these dependent claims are patentable over the references for the same reasons as set forth above.

Therefore, in view of the foregoing amendments and remarks, it is submitted that the ground of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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By:

A handwritten signature in black ink, appearing to read "Michael R. Davis", is written over a horizontal line.

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